



Discover LLNL

The Community Newsletter of Lawrence Livermore National Laboratory ♦ ♦ ♦ Summer 2004

Energy Secretary tours Lab



Secretary of Energy Spencer Abraham visited the Laboratory in July, accompanied by UC President Robert Dynes and UC Vice President for Laboratory Management Robert Foley. Abraham's visit included a stop at the nearly completed Terascale Simulation Facility and the National Ignition Facility. Above, Abraham is joined by Laboratory Director Michael Anastasio and Computation Associate Director Dona Crawford as he signs the first computer rack of BlueGene/L at the Terascale Simulation Facility.

Fire Department marks 50 years

In June 1954, the Laboratory's Fire Department was established to protect what was then the University of California Radiation Laboratory in Livermore. Called the "Fire Brigade," it was the first full-time paid force in Alameda County.

Fifty years later, the Fire Department consists of 79 personnel who provide comprehensive fire protection services to the Livermore main site

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Lab firefighters commemorated a flagpole and special plaque honoring firefighters who died on September 11, 2001 during the 50th anniversary ceremony at the fire house.

Department of Energy extends the Laboratory's contract

U. S. Department of Energy (DOE) Secretary Spencer Abraham recently announced his decision to extend the University of California's contract to manage LLNL for at least two additional years beyond its September 30, 2005 expiration date.

In his announcement, Abraham also indicated that the competition for the contract to manage Los Alamos National Laboratory, also set to expire in September 2005, would proceed



as scheduled. The competition will be managed by DOE's National Nuclear Security Administration.

"It is very important to ensure we have the broadest possible competition for future contracts," said Abraham. "Separating these two competitions will achieve that result."

Abraham's decision was the result of significant internal study, and was influenced by the recommendations of the Secretary of Energy Advisory

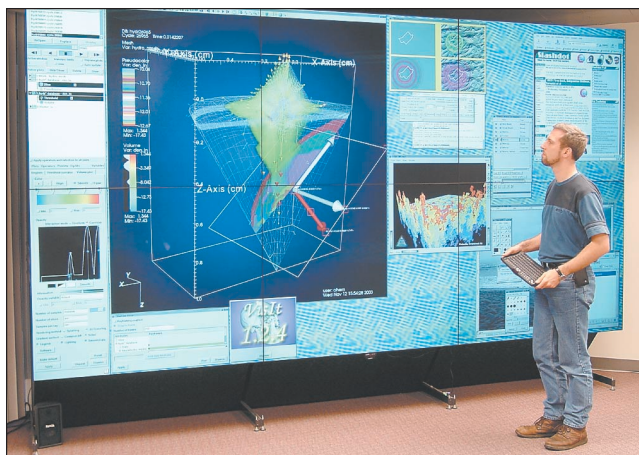
Board's Blue Ribbon Commission on the Use of Competitive Procedures for Department of Energy Laboratories, and the National Academies of Science study on science and technology criteria for competing the contract.

Laboratory Director Michael Anastasio strongly supported Abraham's decision. "DOE has emphasized that their actions are intended to provide a stable scientific environment at LLNL over the next few years," said Anastasio. ♦

Laboratory earns five R&D 100 awards

Laboratory researchers have been awarded five R&D 100 awards from the trade journal *R&D Magazine* for technologies deemed to be among the top 100 industrial innovations worldwide in 2003.

Technologies honored include an Autonomous Pathogen Detection System that can automatically and rapidly detect biological airborne releases; a solid-state heat capacity laser that can uncover and safely neutralize buried land mines; a magnetic levitation system, called Inductrack, which offers a simple, low-cost solution for efficient intercity and urban transportation networks; a software architecture, named Chromium, which allows interactive two- and three-



LLNL's Sean Ahern shows off Chromium, a software architecture that provides a way for interactive two- and three- dimensional graphics applications to operate on clusters of off-the-shelf personal computers.

dimensional computer graphics applications to utilize powerful distributed, graphics-enabled clusters of off-the-shelf or personal computers; and a technology, called siHybrids, which offers a breakthrough tool for RNA interference, a gene-silencing technique that has advanced laboratory research and clinical therapy applications.

With the addition of these five awards, LLNL has been honored with R&D 100 awards 102 times since 1978. This year, U.S. Department of Energy laboratories won a total of 31 R&D 100 awards. ♦

'Thunder' computer ranks high in Top500

The Laboratory's newest super-computer, named "Thunder," recently debuted as No. 2 on the prestigious "Top500" list of the world's fastest computers.

Thunder is a Linux cluster system that utilizes an open source software environment called CHAOS (Clustered High Availability Operating System), developed by the Laboratory. It is configured with 4,096 Intel Itanium 2 processors and rated with a peak speed of 23 teraflops (trillion floating point operations per second).

Designed primarily for scientific research, Thunder will assist in such fields as materials science, energy and environment, biology, structural mechanics and cosmology.

In addition to Thunder, other LLNL supercomputers or related efforts appear on the latest Top500 list. Examples are two prototypes of the forthcoming BlueGene/L system, which made the top 10, the Multiprogrammatic Computing Resource system which ranked 12th, and the Advanced Simulation and Computing (ASC)/White system, now 4 years old, which came in 13th. BlueGene/L and ASC/White were developed in partnership with IBM. ♦

Joint Genome Institute battles disease

Eddy Rubin, Director of the U.S. Department of Energy's (DOE) Joint Genome Institute (JGI), recently announced the completion of the DNA sequence of the pathogen that causes Sudden Oak Death syndrome at an event in June on the JGI campus in Walnut Creek.

The announcement of the sequencing of *Phytophthora* [pronounced Fy-TOFF-thor-uh] *ramorum*, and its cousin *Phytophthora sojae*, which attacks primarily soybeans, was attended by representatives from federal government agencies, local community leaders, collaborating researchers and the media.

The origins of Sudden Oak Death syndrome are unknown. It attacks and kills black, tan and coast live oaks, primarily those along the California coast. *Phytophthora sojae*, a root rot,



Walnut Creek Mayor Pro Tem Gary Skrel presents JGI Director Eddy Rubin with a city proclamation citing JGI's contribution to advancing the understanding of the pathogens that cause Sudden Oak Death and soybean rot.

is estimated to be responsible for more than \$1 billion in damage to last year's soybean crop.

The research into the workings of these two pathogens represents a successful \$4 million three-way federal agency effort of DOE, the U.S. Department of Agriculture, and the National Science Foundation. The results will help advance the search for a cure to these devastating diseases. ♦

Community Leader Day at the Laboratory

LLNL held its annual Community Leader Day on June 17, hosting some 150 elected officials, education and business leaders, and community partners from throughout the Tri-Valley and Central Valley.

The day's guests were welcomed by Laboratory Director Michael Anastasio and National Nuclear Security Administration (NNSA) Livermore Site Office Manager Camille Yuan-Soo Hoo. NNSA oversees LLNL for the U.S. Department of Energy.

Director Anastasio provided an overview of some of the Laboratory's major achievements of the past year, as well as plans for the future. Laboratory Associate Director Wayne Shotts discussed Livermore's contributions to Homeland Security, and National Ignition Facility Project Manager Ed Moses talked about the recent progress of that facility.

Guests also were offered tours of various Laboratory facilities. A sampling of the tour stops were the National Atmospheric Release Advisory Center, where scientists are able to track atmospheric releases from anywhere in the world in a matter of minutes; the Forensic Science Center, where state-of-art forensic techniques are put to use in support of national security needs; the Advanced Simulation Computing Program facility, which houses one of the most powerful supercomputers in the world; and the Biology and Biotechnology Research Program, where scientific advances are helping to improve human health and save



Forensic Science Center Director Glenn Fox (left) discusses the state-of-the-art forensic techniques utilized by the Center with Community Leader Day guests.

lives.

"Community Leader Day is an important aspect of our community outreach efforts to the Tri-Valley and surrounding region," said Anastasio. "It is an opportunity for local leaders to learn more about our facility, and it is an opportunity for us to learn about the needs of the community and how we can be a good neighbor." ♦

Summer students arrive at the Lab

This summer, LLNL is once again playing host to student employees who have come from colleges and universities around the world to work alongside Laboratory scientists and researchers.

In all, some 450 students from California, Michigan, Wisconsin, Texas and elsewhere in the United States have joined international students from Germany, China, the Netherlands, Poland, Russia, England and France to engage in work across the Laboratory.

The students' work assignments are augmented by a number of planned activities such as seminars and panel discussions on topics as diverse as women in science, careers and challenges for young researchers, ethics in science and



LLNL summer student employees visit with Laboratory Director Michael Anastasio (right) at a welcoming reception in June.

graduate opportunities. They will also have an opportunity to tour the U.S. Department of Energy's Joint Genome Institute in Walnut Creek.

LLNL's summer student employee program is one of many ways in which the Laboratory reaches out to help educate the next generation of scientists and engineers. ♦

Fire Department

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and Site 300 near Tracy, as well as mutual aid services for the Livermore-Pleasanton Fire Department, the Alameda County Fire Department and the Tracy Fire Department.

The Laboratory marked this occasion with an event at the fire house that included the commemoration of a flagpole and plaque honoring the New York area firefighters who lost their lives on September 11, 2001.

Another lesser-known responsibility undertaken by the Fire Department is the operation of the Alameda County Regional Emergency Communication Center, based at the Laboratory. It provides emergency fire and medical dispatch services for LLNL, the Alameda County Emergency Medical Services District, Alameda County Fire Department, Alameda City Fire Department, Camp Parks Fire Department, Fremont Fire Department and Union City Fire Department. "The LLNL Fire Department takes great pride in the level of service we have provided, not only to the Laboratory but to our many community partners, over the past 50 years," said LLNL Fire Chief Randy Bradley. ♦



‘Got Science?’

Some 2000 individuals took part in LLNL’s ‘Got Science?’ *Discover Science Saturday* event July 24 at the Discovery Center. Guests enjoyed live music, fun and informative science displays and interactive demonstrations on a variety of subjects including lasers, rockets, sound, robotics, DNA, energy, and forensic science. Director Michael Anastasio (top left photo) visits with LLNL’s Steve Wilson and his “Legends” road racer at the ‘physics of racing’ display. LLNL’s Zhi Liao (top right photo) demonstrates laser imaging technology.

Discover the Laboratory: Take a tour

Discover “Science that Matters” at LLNL’s Discovery Center. Located on Greenville Road just outside the Laboratory’s East Gate, the Discovery Center is free and open to the general public. Hours are Monday

through Friday from 1-4 p.m., and also **Saturdays from 10 a.m.-2 p.m.**

To learn more about the Discovery Center, or how you can join a tour of the Laboratory, go to www.llnl.gov and click on Visiting LLNL. ♦

Discover LLNL is a publication of the Public Affairs Office at Lawrence Livermore National Laboratory.

If you would like to be included in the distribution of *Discover LLNL*, please contact Scott Wilson, wilson101@llnl.gov, or call (925) 423-3125.

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